

**Before The  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

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In The Matter Of

Proposed Changes in the Commission's Rules  
Regarding Human Exposure To  
Radiofrequency Electromagnetic Fields

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ET Docket No. 03-137

To: The Commission

**COMMENTS OF QUALCOMM INCORPORATED**

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## **SUMMARY**

QUALCOMM applauds the FCC for examining its rules on the compliance of transmitters with guidelines for human exposure to radiofrequency (“RF”) energy to prevent adverse health effects from excessive RF radiation while avoiding imposition of an undue burden on regulatees. The NPRM appropriately seeks to clarify the procedures governing RF emissions from mobile and portable devices, including modular devices.

There is, however, an important omission in the NPRM. The proposed changes to the procedures for evaluating RF emissions from modular transmitters apply only to Part 15 modular devices, and there is no discussion of whether similar changes will be made to the procedures governing Part 22 and 24 modular devices, which operate over licensed cellular and PCS spectrum. According to the interpretations database of the Office of Engineering & Technology, there is an informal policy for authorizing Part 22 and 24 modular devices similar to the rules for Part 15 modular devices, but the NPRM does not explain how Part 22 and 24 modular devices will be treated if the rules governing the Part 15 modular devices are changed.

QUALCOMM urges the FCC to adopt rules for Part 22 and 24 modular devices to ensure a level playing field between modular devices operating on licensed or unlicensed spectrum. The public interest strongly warrants a clear, streamlined approval process for Part 22 and 24 modular devices, like that proposed for Part 15 modular devices. There is no reason to treat Part 22 and 24 devices under an informal policy, but to apply formal rules to Part 15 devices.

Indeed, adopting rules for the approval of Part 22 and 24 modules will encourage innovation and bring countless benefits to the public. QUALCOMM’s CDMA technology is the basis for all third generation (3G) wireless products and services, which use licensed cellular and PCS spectrum. In the US, these products and services are based on: 1) QUALCOMM’s 1xRTT

technology, which has been deployed on licensed spectrum nationally by Verizon Wireless and Sprint PCS and regionally by ALLTEL, US Cellular, and others; and/or, 2) QUALCOMM's 1xEV-DO technology, which has been deployed on licensed spectrum by Verizon Wireless in Washington, DC and San Diego and Monet in the Midwest. In most cases, to access 3G services from a laptop or PDA, a subscriber must buy a PCMCIA card and plug it into the laptop or PDA.

Given the rapid proliferation of these 3G CDMA technologies, laptop and PDA manufacturers wish to offer an integrated solution with 1xRTT and/or 1xEV-DO modules embedded into their products so that consumers will not need to purchase and install PCMCIA cards to access 3G services. These enhanced laptops and PDAs will make it significantly easier for consumers to use 3G services. To ease the use of 3G services for the American public, the FCC should adopt rules to streamline the approval process for such Part 22 and 24 modular transmitters, just as the NPRM proposes streamlining for Part 15 modular transmitters.

QUALCOMM proposes common sense rules to streamline approval of Part 22 and 24 modules. The FCC should apply the same eight requirements for Part 15 modules in Public Notice, DA 00-1407, rel. June 26, 2000 to Part 22 and 24 modules. Rather than having to seek approval of each laptop or PDA containing the Part 22 or 24 module, a manufacturer should be able to get an approval for the module with RF safety compliance assured and then, subject to the grant notes, to make Class I or II permissive changes to use the same FCC ID for each product into which the module is embedded. A laptop or PDA manufacturer should be able to obtain a grant of a module after submitting RF exposure data from one laptop or PDA and then embed the module in other models within the same family of laptops and PDAs consistent with the definition of a Class I permissive change. A laptop or PDA manufacturer should not have to get approval for each model in which the same 1xRTT and/or 1xEV-DO module is embedded and

should be allowed to reference attachments from a previously granted application filed by a module manufacturer, even if such attachments were confidential.

Clear requirements for SAR testing are also in the public interest. The FCC's rules should reference Supplement C to OET Bulletin 65 for the required procedures for SAR testing of both portable and non-phone devices. For non-phone devices, OET Bulletin 65 should specify the required test positions for laptops and PDAs, the 3-host methodology for testing of PCMIA cards, and a clearly defined separation distance for all tests. New products, such as 3G-ready laptops, can get to market more quickly if the SAR testing requirements are clear.

Finally, although the NPRM proposes that no SAR testing be required for devices operating under 200 mW at a separation distance of 20 cm from the user's body, a threshold of 500 mW peak radiated power is more appropriate for laptops in which antennas are located in the displays. The maximum permissible exposure ("MPE") calculations performed in accordance with Supplement C for devices operating at 500 mW at a separation distance of 20 cm results in RF exposure levels below the limits in Section 1.1310 of the FCC's Rules. Based on previously approved PCMIA Part 22 and 24 devices operating at or above 500 mW, it is clear that these devices also meet the SAR requirements when tested at the separation distance of 1.5 to 2.5 cm recommended in OET 65 for body worn devices. A 500 mW device tested at a 20 cm separation distance will clearly meet the SAR requirements. Based on the test results of the previously approved PCMIA devices that operate at or below 500 mW, there is no reason to require burdensome SAR testing of Part 15, 22, and 24 modules. Section 2.109 (c) (1) should be amended to be technology-neutral to facilitate the integration of future technologies into laptops.

These suggestions, if adopted, would establish a level playing field for modules and would further the public interest by enabling a new generation of 3G-ready laptops and PDAs.

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To: The Commission

**COMMENTS OF QUALCOMM INCORPORATED**

QUALCOMM Incorporated ("QUALCOMM") hereby submits its Comments in the above-captioned proceeding initiated by the Commission in its Notice of Proposed Rule Making, FCC 03-132, released June 12, 2003, ("NPRM"), to consider propose changes to Parts 1 and 2 of the Commission's rules elating to the compliance of FCC-regulated transmitters and facilities with the FCC's guidelines for human exposure to radiofrequency ("RF") energy. See NPRM at ¶1. The proposals in the NPRM are "intended to ensure that the public is appropriately protected from any potential adverse effects from RF exposure as provided by the exposure limits in (the Commission's rules), while avoiding any unnecessary burden in complying with (the Commission's) RF exposure rules." Id.

QUALCOMM supports these goals and only asks that they be applied to all modular devices, including those that operate both on licensed as well as unlicensed spectrum. The NPRM deals extensively with the rules to govern approval of Part 15 modular devices. Id. at ¶¶ 21-30. However, the NPRM does not discuss the procedures to govern approval of Part 22 and 24 modular devices. QUALCOMM submits these Comments to ask the Commission to correct this omission and to adopt rules to streamline the approval of Part 22 and 24 modular

devices, both to create a level playing field between licensed and unlicensed modules and to enable the swift approval of Part 22 and 24 modular devices to enable a new generation of 3G-ready laptops and PDAs, which will greatly benefit the American public.<sup>1</sup>

## **I. Background**

QUALCOMM is a world leader in developing innovative digital wireless communications technologies and enabling products and services based on the digital wireless communications technologies that it develops. QUALCOMM's code division multiple access ("CDMA") technology is America's fastest growing digital communications technology. Due to its unsurpassed voice quality, data delivery speeds and performance, system capacity, spectral efficiency, privacy, and inherent flexibility, QUALCOMM's CDMA technology is the basis for all third generation ("3G") wireless products and services, which to date have been deployed by 64 carriers based in the United States and 32 other countries around the world.

As of October 31, 2003, 36 of those operators have reported that they already have a total of over 70 million subscribers for 3G CDMA services. Operators in the United States and elsewhere around the world who have deployed 3G CDMA have experienced dramatic and rapid growth in both in terms of numbers of subscribers and average revenue per subscriber.<sup>2</sup>

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<sup>1</sup> Throughout these Comments, QUALCOMM refers to Part 22 and 24 modules, which will operate on licensed PCS and cellular spectrum on which 3G CDMA is deployed today. However, in the future, 3G CDMA may be deployed on spectrum licensed under Part 27, such as the WCS spectrum, the Lower and Upper 700 MHz, and the 1.7/2.1 GHz spectrum, and there will be demand for modules to operate on that licensed spectrum as well. The changes that QUALCOMM suggests to the Commission's rules to establish a streamlined process for approval of Part 22 and 24 modules should also apply to modules designed to work on other licensed frequency bands other than the cellular and PCS spectrum.

<sup>2</sup> Additional information about the proliferation of 3G CDMA services is available at [www.3gtoday.com](http://www.3gtoday.com).

The products and services based on 3G CDMA enable wireless data to be sent and received at very high speeds: the first release of QUALCOMM's 1xRTT technology, which has been deployed here in the United States by Sprint PCS, Verizon Wireless, ALLTEL, US Cellular, and other carriers, enables data to be sent and received wirelessly at peak rates of 144 kbps, and the first release of QUALCOMM's 1xEV-DO technology, which has been deployed by Verizon Wireless in Washington, DC and San Diego and by Monet in Midwestern markets, enables data to be sent and received wirelessly at peak rates of 2.4 mbps, a speed that is comparable to wireline broadband technologies such as cable modems and DSL. Thus, QUALCOMM's 3G CDMA state-of-the art technology enables subscribers to enjoy high speed wireless data service.

Moreover, QUALCOMM broadly licenses its CDMA technology to over 100 leading handset and infrastructure equipment manufacturers around the world. At present, there are 43 vendors who have manufactured 371 different 3G device models that are now commercially available in the United States and elsewhere around the world.

Today, for the most part, consumers access 3G wireless data services from their laptops and PDAs only by buying a PCMIA card and plugging the card into his or her laptop or PDA. Given the rapid proliferation of 3G CDMA technology, laptop and PDA manufacturers wish to offer an integrated solution with 1xRTT and/or 1xEV-DO modules embedded into their products so that consumers will be able to access 3G services from laptops and PDAs without having to buy and install a PCMIA card. This new generation of laptops and PDAs would make it substantially easier for consumers to use 3G wireless data services and will meet the rapidly growing consumer demand for 3G services.



The FCC has apparently for some time maintained an informal policy to govern the approval of Part 22 and 24 modules such as the ones that would have 1xRTT or 1xEV-DO capability and that would be embedded into laptops and PDAs. The informal policy mirrors the process for the approval of Part 15 modules. The NPRM does not explain, however, whether the changes proposed to the process for the approval of the Part 15 modules would also apply to the approval of Part 22 and 24 modules. QUALCOMM believes that the time has come for the Commission to adopt formal rules to streamline the approval of Part 22 and 24 modules, ensuring that they will be treated in a manner similar to the treatment of Part 15 modules.

**II. The FCC Should Adopt Rules to Govern Approval of Part 22 and 24 Modules So That a Manufacturer Can Obtain Approval of Such a Module Based on Testing of the Module in One Laptop or PDA and Then Make Class I or II Permissive Changes to Embed the Module in Other Laptops or PDA Models Using the Same FCC ID**

As noted supra, the FCC's existing rules do not provide a procedure for the approval of Part 22 or 24 modules. However, according to the interpretations database maintained by the OET staff, there is an informal policy by which these modules are approved. The informal policy established an approval process for Part 22 and 24 modules that mirrors the process by which Part 15 modules are approved, provided that the Part 22 or 24 module is used as a "mobile device" maintaining a separation distance of 20 cm.

The informal policy has been explained in OET's interpretations database Item 20000316-004 as follows:

"Now, as to your second question, We have been discussing this issue for some time now, and have decided to apply the same policy that we have in place for Part 22 modules. The following is a summary of that policy: (a) if RF exposure compliance is by categorical exclusion (MPE) and the module is not restricted to specific final products where the RF exposure conditions are well defined, operating instructions, warning statements and labels are required for the OEM integrator and final product users. (b) if RF exposure compliance is by categorical exclusion (MPE) and the module is restricted to specific final products with well defined RF exposure conditions, operating

instructions are needed for end users of the final products to satisfy MPE compliance, warning statements and labels will be determined on a case-by-case basis. ( c) for categorical exclusion from MPE evaluation to demonstrate compliance, the antenna gain, cable losses and certain other conditions must be clearly defined and will be listed as grant conditions. These modules are approved for mobile operations only with respect to 2.1091 and OEM integrators must seek separate approval to satisfy SAR requirements of 2.1093 for operation as a portable device.”

Under this informal policy, the Commission has apparently approved Part 22 and 24 modules. However, there are no written rules in this regard, and the Commission has not provided any guidance for how Part 22 and 24 modules will be treated if the proposals in the NPRM to modify the rules governing approval of Part 15 modules are adopted. QUALCOMM asks the Commission to adopt rules to govern the approval process for Part 22 and 24 modules so there is no uncertainty about how the Commission will treat such modules and to create a level playing field between modular devices operating on licensed or unlicensed spectrum.

The rules governing Part 22 and 24 modules should be straightforward and mirror the rules governing Part 15 modules. In Public Notice, DA 00-1407, rel. June 26, 2000, entitled “Part 15 Unlicensed Modular Transmitter Approval,” the Commission established eight requirements that an applicant must meet to obtain approval of a Part 15 module. The Commission should make clear that the same eight requirements, and no others, apply to an applicant seeking approval of a Part 22 or 24 module.

This would permit laptop and PDA manufacturers to embed a Part 22 or 24 module into laptop and PDA models under the same procedures by which Part 15 modules are embedded into a variety of devices and to ensure that the laptop and PDA manufacturers will not have to submit from scratch a new application for each new product containing the module. Rather, the grantee should be able to receive authorization for the module based on RF testing of one laptop or PDA

model. Then, with the authorization for the module in hand, and consistent with the grant notes in the authorization, the manufacturer should be able to make Class I or II permissive changes to use the same FCC ID for additional laptop or PDA models. The Commission's Class I and II permissive change rules are more than sufficient to ensure that RF performance is similar from model to model and that the public's safety will not be put at risk by successive models.

A laptop or PDA manufacturer should not have to submit RF testing for each and every laptop or PDA model in which a module is embedded. Instead, as explained above, a manufacturer should be able to obtain authorization based on RF testing of one laptop or PDA in which a module is embedded, and then consistent with the grant notes and the Class I permissive change rules, to use the same FCC ID to all future laptop or PDA models in the same product family.

Adoption of the rules to codify the procedures discussed herein would bring substantial benefits to the public. A new generation of 3G-ready laptops and PDAs, with embedded 1xRTT and/or 1xEV-DO, would make it far easier for millions of Americans to access exciting, innovative 3G high speed wireless data service from laptops and PDAs. Productivity and economic growth would be fostered, and innovation would be encouraged. In short, usage of 3G high speed wireless data services would likely grow at even more accelerated levels than the current growth, no small feat. There are compelling public policy reasons for the FCC to adopt streamlined rules to speed the approval process for Part 22 and 24 modules.

### **III. The FCC Should Permit Laptop and PDA Manufacturers to Incorporate By Reference Attachments from Previously Approved Applications for Modules, Even If the Attachments Were Filed As Confidential**

Merely putting in place clear rules for the process by which the Commission will approve Part 22 and 24 modules is not, by itself, entirely sufficient to ensure that laptops and PDAs containing such modules can be brought to market quickly. There are other steps that the Commission should take to streamline the approval process.

One such step would be for the Commission to permit laptop and PDA manufacturers seeking approval of their products to reference attachments previously filed by a manufacturer of a module embedded into the laptop or PDA, even if such attachments were filed with a confidential designation. At present, the laptop or PDA manufacturer is required to contact the module manufacturer and obtain a copy of the previously filed attachments and upload them again into the FCC's electronic filing system with the laptop or PDA manufacturer's application for approval of a laptop or PDA model.

These steps take precious time and appear unnecessary. Just as the Commission permits incorporation by reference in applications filed in a host of other contexts, it should be permitted here too with respect to applications for approval of Part 22 and 24 modular devices so that 3G-ready laptops and PDAs can proceed swiftly into the market.

### **IV. The FCC Should Enact Clear Requirements for SAR Testing**

Equally important to the creation of a streamlined approval process for Part 22 and 24 modules and a level playing field between all modular devices, both Part 15 and Part 22 and 24, is a common standard with clear requirements for SAR testing. Thus, QUALCOMM supports the proposal at ¶34 of the NPRM to incorporate a reference to Supplement C to OET Bulletin 65

into the Commission's Rules, but QUALCOMM asks that guidelines for testing of non-phone devices (such as modules) be formally incorporated into OET Bulletin 65. This will eliminate any confusion or uncertainty over the testing guidelines applicable to non-phone devices.

Furthermore, these guidelines should include the required test methodology for laptops and PDAs, a description of the required 3-host methodology for PCMIA cards, and clearly defined separation distances to be used when testing other wireless devices. Nothing slows down the equipment authorization process more than uncertainty among applicants over the required testing that must be completed, and nothing slows down innovation more than an unduly long authorization process. Thus, incorporating these additional guidelines into OET Bulletin 65 should speed up the equipment authorization process as module, laptop, and PDA manufacturers should be more aware of what is required of them, a result that would advance the public interest in encouraging innovation and getting new products into the market more quickly.

**V. The Commission Should Exempt Devices with Antennas Located in Laptop Displays That Operate At Up to 500 mW at a Distance of 20 cm from the User's Body from SAR Evaluation**

The NPRM, at paragraph 27, proposes that devices operating under 200 mW when a separation distance of 20 cm can be maintained from the user's body be exempt from the requirements to submit SAR testing. QUALCOMM believes that a power threshold of 500 mW peak radiated power is more appropriate for the exemption from SAR testing for such devices (laptops) and should be adopted for at least three reasons.

First, a power threshold of 500 mW peak radiated power is more suitable for both licensed and unlicensed devices. Laptops with Part 22 and 24 modules will need to operate at greater power than 200 mW, but as shown below, are not any more likely to exceed the SAR limits. A power threshold of 200 mW would favor Part 15 unlicensed devices over Part 22 and

24 licensed devices, without any discernable difference in SAR levels. The public interest lies in technology-neutral policies that do not favor unlicensed devices over licensed devices or vice versa.

Second, the maximum permissible exposure (MPE) calculations performed in accordance with OET Bulletin 65 for devices operating at 500mW with a 20 cm separation distance results in RF exposure levels below the limits specified in Part 1.1310. As a result, the theoretical calculations show that there would be no adverse impact on the public's health and safety if the power threshold were set at 500 mW peak radiated power for the exemption from SAR testing for laptops with antennas located in their displays.

Third, there is empirical evidence that demonstrates that a laptop with a module operating at 500 mW peak radiated power, when tested at a 20cm separation distance, would easily meet SAR requirements. The FCC's database contains information on the SAR test results of previously authorized Part 22 and 24 PCMIA devices. These submissions show that such devices that are operating at or even above 500 mW meet the SAR requirements when tested at a separation distance of 1.5 to 2.5 cm, as recommended in OET Bulletin 65 for body worn devices.

Thus, the empirical data already on file with the Commission shows that to require SAR measurements for these devices operating at up to 500 mW peak radiated power at a separation distance of 20 cm is not necessary and would impose an undue burden on applicants seeking approval of these devices. QUALCOMM believes that Section 2.109 (c)(1) of the Commission's Rules should be amended to delete the reference to Part 15 modular transmitters and to state the requirement in terms of power level, not technology, to facilitate the integration of future wireless technologies into laptop computers and to spur technological innovation.

## **VI. Conclusion**

For all of the foregoing reasons, QUALCOMM respectfully requests that the Commission adopt rules to streamline the authorization of Part 22 and 24 modules and to modify the equipment authorization process as discussed herein.

Respectfully submitted,

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